ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

7210.60

10/15/03

SUBJ: POLICIES AND PROCEDURES FOR VALIDATING NEW/REVISED SECTORS/POSITIONS IN TERMINAL AND ENROUTE AIR TRAFFIC FACILITIES

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1. PURPOSE. This order provides direction to regional air traffic divisions regarding the process for requesting new/revised sectors/positions in air traffic facilities.

2. DISTRIBUTION. This order is distributed to the division level in Washington and regional headquarters Air Traffic offices, and to all Air Traffic field facilities.

3. CANCELLATION. None.

4. EFFECTIVE DATE. This order is effective November 7, 2003

5. BACKGROUND.

a. Order 7210.46 was canceled in 1995. This document is the replacement Order and applies to all enroute and terminal facilities.

b. Air Traffic facilities require a method to standardize the process for requesting new/revised sectors, positions, and associated assets. This Order will promote consistency in approvals and give facilities a blueprint that enables the requestor to focus on only the essential issues of the request and provide the approving authority a valid basis for establishing priorities for assigning placement of limited resources. Provides a means for the Air Traffic Airspace Management Program Office (ATA) to collect and store all data pertaining to sectors/positions.

6. RESPONSIBILITIES.

a. Headquarters. The Program Director for Air Traffic Airspace Management, ATA-1, shall direct policy and process regarding requests for new sectors/positions. ATA-1, in coordination with Air Traffic Planning and Procedures Program (ATP) and Air Traffic Resource Management Program (ATX), shall prioritize requests consistent with available resources and approve/disapprove such requests in a timely manner so as to preclude any derogation of Air Traffic services.
See Appendix IV.

b. Regional Air Traffic Divisions. Regional Air Traffic Division (RATD) Managers shall have the responsibility for ensuring that all appropriate documentation from Air Traffic facilities is prepared accurately and completely. In addition, the RATD Managers shall be responsible for designating at least one

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person to serve as the New Sectors/Positions Specialist (NSPS) within their divisions to address questions from the field and to be the focal point between the division and headquarters. This position shall be assigned as a collateral responsibility. Air Traffic Division (ATD) Managers shall approve/disapprove requests for new sectors/positions in a timely manner so as to preclude any derogation of Air Traffic services. ATD Managers shall ensure that no airspace changes occur without the appropriate coordination with ATA.

Note: *Additional guidance for preparation and content of staff studies may be found in RTCA SC192 (available through the NSPS and FAA Order 1800.2, Evaluations, Appraisals, and Staff Studies.) Copies of SC192 may be obtained through the RTCA Website after receiving a password from ASD-102 in Washington Headquarters.*

c. Air Traffic Division New Sectors/Positions Specialist (NSPS).

(1) The NSPS shall provide guidance to facilities in the preparation of required documentation. *See Appendix 1*

(2) The NSPS has the responsibility for reviewing staff studies from field facilities.

(3) The NSPS shall ensure the facility packages are accurate and complete.

(4) The NSPS shall prepare the RATD letter of concurrence for the ATD manager's signature or coordinate with the requesting facility if the region does not concur.

d. All Terminal and Enroute Facility Managers.

(1) The Air Traffic Manager (ATM) shall ensure that the facility maintains an awareness of the needs of the facility as well as the National Airspace System (NAS) stakeholders. This awareness should preclude any derogation of Air Traffic services. Methods to determine need are found in Appendix I.

(2) The ATM shall assign facility personnel to form the Study Team and decide external stakeholder participation.

(3) The ATM shall be responsible for ensuring that all appropriate documentation as outlined in this Order is prepared accurately and completely.

(4) The ATM shall be responsible for approving and forwarding of the facility request to the RATD.

7. STAFF STUDY.

All ATM's, upon identifying the need for new/revised sectors/positions (*See Appendix I*), shall organize a study team to prepare a staff study. The study team shall be responsible to the ATM and ensure the staff study includes the following: *See Sample Staff Study, Appendix II.*

Note: *The size, cost, and complexity of the project will dictate the methods used for validation. For example, A Ground Control position should not require the same level of study as a new TRACON or several center sectors. Requests of this nature should use the applicable paragraphs in this Order to present a sound operational and business case for the project.*

a. Explore possible options.

(1) It is normally preferable to resolve airspace issues internal to the affected facility. If it becomes necessary to involve other facilities, there are many questions that should be asked by management and the study team to ensure the most cost-effective option is chosen. Some questions that could serve to aid in the decision to continue at any given stage of the study process are:

Centers/Terminals – Have you looked internally to solve traffic issues?
Centers/Terminals - Have you looked internally for other ways to free up equipment?
Centers/Terminals - Have you considered transferring airspace to other facilities?
Centers - Have you considered transferring airspace to terminals?
Terminals – Have you considered transferring airspace to centers?
Centers - Have you considered moving sectors from a constrained center to a center 2 or more tiers away?
Centers - Have you considered transferring a low altitude sector to a first-tier facility to free up resources for a high altitude sector?
Centers/Terminals - Have you considered TM initiatives that do not impact the stakeholders? Minor intrail, release times, reroutes, to mitigate an overloaded sector/position.
Centers/Terminals - Have you discussed options with the ATCSCC?
Centers/Terminals - Have you discussed options with the stakeholders?
Centers/Terminals - Is staffing an issue?
Centers/Terminals - Have you considered re-stratifying sectors to balance workload?

b. Statement outlining the operational justification/issue(s).

(1) Examine the operational issue(s) and confirm the problem is clearly and accurately stated. It is recommended that a cross-section of controllers be used on the study team including management, controllers, union representation, and, if practical, a NAS stakeholder. Those facilities limited by staffing will be required to prepare the same documentation as outlined in this directive. However, staff participants may be replaced/supplemented by personnel from their respective Hub's, regional office, or if feasible, a nearby facility. Traffic Management personnel should be included at all levels of the study to ensure all possible alternatives have been considered.

(2) Once the problem is validated, determine if it is an issue of sector/position design that could be addressed by changing a procedure or operation that would be less intrusive and costly. Airspace and procedures problems that can be attributed to sector or area of responsibility design are generally identified by controllers and other service providers or by sources such as NAS stakeholders and the public. If the scope of the problem as well as its solution is limited to a single facility, that facility will often be responsible for examining and solving the problem. However, if the scope extends beyond facilities' boundaries or may impact another facilities' operations, the RATD or FAA Headquarters will be responsible for facilitating an appropriate solution.

Note: *In most cases, problems of a scope that cross facility/regional boundaries should be resolved at the lowest management level before elevation.*

(3) Statement of expected benefits. Outline the anticipated gains from approval of the request. Tangible results shall be supported by documentation showing the rationale and sources used to derive such benefits. Intangible gains such as improved customer relations, a more manageable controller workload, etc., shall also be included.

(4) Sector/position description. If the statement of operational justification indicates the need for additional studies, the ATM shall establish a study team. A clear description of the proposed sector/position shall be included. Show the relationship of the proposed sector/position to other sectors/positions, facility boundaries, adjacent positions, etc. Lower density facilities may substitute some actions of the study team with work done by the ATM in collaboration with hub/regional office staff. Regardless of the method, the same process and data is required. The study team will clearly define the scope of the study to include the technical content, costs, and resources including software models and modeling tools.

(5) Model the proposed sector/position. The study, begun with a formal statement of the problem, will, at a minimum, consist of the following steps.

NOTE. *Generally, the problem statement should address only 1 problem depending on the size and complexity of that problem. Consultation with the NSPS will determine if a separate staff study is indicated.*

(a) Revalidate the Issue(s). Ensure the problem is well understood and all related issues have been clearly identified and documented.

(b) Select and Define Applicable Metrics. The team shall develop a baseline of these metrics so comparison of alternative solutions can be made. If applicable, the team should consult the guidelines developed by RTCA Special Committee 192 on National Airspace Review Planning and Analysis to select metrics.

(c) Identify Alternatives. The first step should be brainstorming so that no alternative, including partial solutions is overlooked. Package the brainstorming sessions into distinct alternatives and define them to a comparable level of detail. The team shall consider the schedule/budget/resource constraints and select a limited number of promising alternatives for full evaluation.

(d) Determine Type of Analysis. Generally, the type of analysis should be selected on the basis of minimum necessary resources. The analysis could cover combinations of expert judgment, statistical and/or data analysis (delays, holding, cancellations, unanswered calls, visibility issues, etc.), modeling and simulation (sector density, reroutes, flight times, taxi times, etc.), or human-in-the-loop testing to get pilot's/controller's view.

(e) Select Tools. The team should select specific tools to be used during the study. Availability and reliability of the tools should be examined before selection.

(f) Define Baseline and Alternative Scenarios. Baseline data derived for example from OE's/D's, sector density, potential conflicts, holding, vectoring, taxi queues, missed calls, etc., should be used as a point of reference when assessing alternatives.

(g) Adapt, Calibrate, and Validate Model. The team should adapt the model to the specific facility, site, sector, and/or position under study. The model should be calibrated or tailored to reflect specific constraints such as, miles-in-trail, altitude restrictions, or off-gate performance. Also, validate for both the baseline and alternate scenarios prior to any production runs.

(h) Make Production Runs. Run the above validated model to predict the performance of the alternative scenarios. Expert judgment should be used in selecting an appropriate set of scenarios and simulations.

(i) Analyze Model Output. The team should compare the performance of the various alternative solutions with the baseline performance.

(j) Perform Sensitivity Analysis. Alternative scenarios and models are often based on certain assumptions. These could include traffic growth projections, aircraft types, equipage, infrastructure changes, and other assumptions. The team should ensure that the analysis remains valid even if assumptions change. Assumptions should be kept to a minimum.

(k) Conduct Human-in-the Loop Tests and Evaluation. If the team finds it necessary, it should conduct real-time simulations using experienced pilots and/or controllers. Such tests would bring a human factors perspective to the study and validate conclusions.

(l) Statement of Resources. These items shall include:

(1.) Fiscal (include overtime for development and operation).

(2.) Effect on staffing.

(3.) Equipment needs (identify major end items and quantity)

(6) Timeline of Events to and including Operational Readiness.

8. FACILITY LEVEL SUMMARY.

a. Formally document the comparative results, analysis, conclusions, and recommendations of the staff study.

b. Send completed staff study to ATM for review.

c. ATM will forward to the principle facility union representative. This will provide the facility representative with the opportunity to review the study and document the union's perspective. Concurrence/non-concurrence is not required.

d. ATM will forward the study, with union comments, to RATD. *(See APPENDIX IV)*

9. REGIONAL REVIEW.

a. The RATD NSPS shall review the report.

b. The RATD NSPS shall prepare an endorsement of the study for the RATD.

c. RATD shall, if satisfied changes would be in the best interest of the NAS, attach the endorsement to the study and forward to ATA-1.

10. HEADQUARTERS REVIEW.

a. ATA will review all requests approved by the regions.

b. ATA will ensure ATP, ATX, and the headquarters union representative(s) have the opportunity to review and provide input.

c. ATA will advise the region if the request is approved, disapproved, or incomplete.

Note. *The approval/validation of sectors/positions for facilities under this Order does not exempt the receiving region from the responsibility to submit budget request for required equipment/improvements for the approved positions through the Facilities & Equipment (F&E) budget call process. In addition, this Order does not supercede any existing negotiated labor agreement.*

11. PLAN IMPLEMENTATION.

a. The ATM shall define a realistic schedule, training, and/or coordination requirements, and staffing to minimize operational disruptions.

b. Development plans may be found in FAA's Airspace Management Handbook – Guidelines.

12. EVALUATION OF RESULTS BY ATM.

a. All changes shall be evaluated after implementation.

b. Utilize the metrics developed to validate the project to ensure the anticipated benefits have been gained.

c. Ensure customer feedback is obtained.

d. Revisit the entire process to assess its effectiveness.

Note. *It is expected that the staff study, once initiated, be allowed to continue without a thorough review process. If the resultant changes do not meet expectations or present the anticipated business case, the project should be revisited.*

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Airspace Management Program

APPENDIX I. METHODS TO DETERMINE THE NEED FOR AND PROCEDURES TO DEVELOP NEW/REVISED SECTORS/POSITIONS IN AIR TRAFFIC FACILITIES

Recognizing Traffic Changes

1. Sector/Position consistently operating beyond normal volume loads.
2. Significant/increasing delays incurred by customers.
3. Significant/increasing restrictions needed to preclude saturation.
4. Sector/Position complexity.
5. Valid user/controller input.

Causes

1. Permanent air carrier schedule changes.
2. Customer's operating equipment.
3. Special-Use-Airspace.
4. NAS infrastructure changes.
5. Adjacent facility issues.

Methodology for Validation

1. Recognize the problem – Issues may come from controllers, customers, and/or other facilities.
2. Determine the need for further evaluation – Decide if the problem is of short duration caused by a special event, weather, and/or temporary equipment/personnel issues.
3. If further evaluation is needed, form a team at the lowest level. (Supervisor, CPC, staff specialist, and NATCA team rep) At lower density facilities, the manager may be involved in initial investigation.
4. Coordinate with adjacent facilities. Seek internal solutions first.
5. Have the team prepare an informal preliminary report for presentation to the appropriate facility office. Modeling, when available, should be considered. At lower density facilities, the manager may discuss with a regional AT contact.
6. The responsible facility office should concur and/or offer suggestions and present to the team for input and return to the facility office.
7. The responsible office shall formalize the plan and forward to the Facility Manager for review. Coordinate with and include user groups in the process.
8. The Facility Manager shall ensure the validity of the plan and forward to the AT Division.
9. The AT Division shall thoroughly review the request, validate the information, and formalize the request for presentation to ATA.

Goals of Resectorization

1. Increase efficiency
2. Reduce delays
3. Maintain/Increase safety
4. Increase predictability

increase in miles-in-trail as the bank peaks and the inbound bank arrives. This 18-minute average compares unfavorably with no current reportable delays. The estimated cost to the stakeholders at 18 minutes per approximately 20 affected aircraft per bank for 6 banks daily at the industry average cost to operate an aircraft of $65 (*Appendix 6*) per minute equates to in excess of $140,000 daily. Total cost to the stakeholders for this inefficient sector design and configuration is over $2.8M per month when computed to the expected demand.

Note: *Appendix 5 could show additional modeling with this projected increased traffic and extrapolated TM data if no action was taken. Appendix 6 could be an article in a well-known national aviation publication regarding cost of aircraft operation, FAA, or DOT derived data. Do not assume that the reader will accept the figures you use as facts. Give sources.*

The Verybusy Sector accounts for 12 percent of the overtime used in the facility. We anticipate the percentage would climb to nearly 35 percent if no sector changes are accomplished and traffic numbers increase as projected. At the current rate of overtime usage for the facility ($10,000 per month) the current charges attributable to the Verybusy Sector is $1,200 per month. If no action were taken to accommodate anticipated traffic from the new runway, the amount would be $3,500 per month.

The daily TM constraints result in ground delays for traffic destined XYZ IAP from both first and second tier facilities (*Appendix 4*). Data from OPSNET indicates that an average of 80 minutes reportable delays daily, 37 internal and 43 external, are incurred by airlines when the MOA is active. The REALHOT MOA averages operations 7 times per month. The approximate cost to the stakeholders for these delays is $36,000 per month (*Appendix 5*). In addition, the Commander, 5th Air Force, informs us that cancellations to training missions in the MOA cost over $1M annually in fuel (*Appendix 7*).

Note: Appendix 7 could be a letter from the Commander, 5th Air Force or record of telcon.

Therefore, the total estimated annual cost to the stakeholders to remain in the current sector configuration is conservatively estimated to be $35 million.

Intangible benefits but nonetheless significant are:

1. Minimizing unproductive workload for controllers.
2. Goodwill with our stakeholders.
3. Reduction to elimination of the derogation to military pilot proficiency by inability to train in the MOA.
4. Reduction to elimination of first tier TM initiatives.

SECTOR DESCRIPTION

This section should be for graphics of the proposed description including latitude/longitude for the sector boundaries; altitudes to be used; name; number; focal point fix; adjacent sector/facilities/approach controls; any additional items you feel would help to clarify and/or support the request. A narrative describing the sector, its complexities (crossing traffic, proximity to MOA, facility boundaries, prevailing wind if a factor, seasonal issues, etc.) should be added.

Note: The appendices will support the case for new sectorization. However, anecdotal information would be of benefit. Be cautious not to embellish too much.

MODELING RESULTS

Use the modeling to support any contentions or "facts" that would prove your case. Exclusively using one form of data reduction may not tell the entire story of your request. Find information that shows the impact and the results of inefficient design (TM logs, adjacent facility restriction, ATCSCC data, etc.) Busy lines streaking through a sector do not prove volume or complexity. We know it's there, just show us where we can substantiate the claim.

STATEMENT OF REQUIRED RESOURCES

1. Fiscal. *How much money will you need? Itemize this list with a breakdown of training, overtime, travel if needed, etc.*
2. Effect on Staffing. *What additional, if any, staffing will be required? Address additional supervisory staffing, if appropriate.*
3. Equipment Needs. *Scopes, frequencies, printers, automation equipment, etc.*

DESIRED OPERATIONAL DATE

When do you want all the preparations completed? The assumption here is that it should be prior to the event that is driving the changes or a date as soon as possible to mitigate adverse impact to the stakeholders, safety, and/or efficiency.

APPENDIX II. SAMPLE STAFF STUDY

(Appendix numbers in this sample are for illustrative purposes only)

STATEMENT OF OPERATIONAL JUSTIFICATION

The XYZ International Airport has begun construction of new runway 36-18 and it is programmed to begin operations in October 2004. Concurrent with runway construction, a new concourse with thirty-seven new domestic and international gates is being constructed with planned operational availability in October 2004.

Ontime Airlines, the dominant carrier (62% of daily operations) at XYZ IAP, has announced (*Appendix 1*) an additional 230 departures daily from this new complex when it is completed. Ralph's Airline, a startup commuter, has firm leases with XYZ IAP for 7 gates and has presented to the local transportation authority and airport management (*Appendix 2*) their plans for 62 departures daily.

Note: *Appendices I and II could contain local newspaper articles, aviation related news, airport publications, and/or letters from individual airlines outlining their plans. This helps to start to paint a more complete picture of the need and gives the reader the "feel" of events from the beginning. Do not assume that since this issue has dominated your local news that the reader knows all the facts and background.*

The current sector configuration at XYZ Center (*Appendix 3*) combines the departure and arrival functions to/from XYZ IAP at the Verybusy Sector on position 13. During six timeframes daily the departure banks overlap with the arrival banks and mandate the implementation of Traffic Management (TM) initiatives (*Appendix 4*) to preclude sector saturation and unmanageable sector complexity. The Verybusy Sector also has the REALHOT Military Operations Area (MOA) within its confines that is utilized daily from the surface to FL230. This MOA activity requires arrival traffic to XYZ IAP from first tier ABC Center be constrained by miles-in-trail and single stream (*Appendix 4*). On occasion, because of the volume/complexity of the Verybusy Sector, we are forced to deny the military access to the MOA.

Note: Appendix 3 should show the current sector configuration including the associated airspace, abutting sector/airspace, altitude, SUA, and predominant traffic flows. Appendix 4 could have relevant traffic management logs, OEDP and SDAT readouts, or any other information to help the reader "see" saturation, complexity, and impact on adjacent facilities. In addition, Appendix 4 could show the log from the ATCSCC or the adjacent facility.

STATEMENT OF EXPECTED BENEFITS

XYZ Center modeling (*Appendix 5*) indicates that given the existing sector configuration, the proposed additional traffic generated by the airlines, 50 per bank, and the increased ability of XYZ Tower/TRACON to generate traffic from the new runway will result in an increase in departure delays averaging 18 minutes. These projected delays assume a front-end load of the sector and gradual

This guidance is not intended to be all-inclusive in a facility's search for the optimum formula needed to provide the safest, most efficient service possible.

APPENDIX III. Sample ATD Request for New/Revised Sectors/Positions

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Subject: **ACTION**: Request for New Sectors

From: Manager, Air Traffic Division, AXX-500

TO: Program Director for Air Traffic Airspace Management, ATA-1

ZZZ ARTC Center has identified a need for two (2) new sectors in order to develop airspace in support of the second runway being constructed at XYZ airport.

The attached staff study provides supporting documentation, modeling data and annexes that detail the need and justification for this project.

The study contains:

1. Page 1: Statement of Operational Justification
2. Page 3: Statement of Expected Benefits
3. Page 5: Sector Description
4. Page 7: Modeling Results
5. Page 11: Statement of Required Resources, which include;
    a. Fiscal needs including overtime
    b. Effect of Staffing
    c. Equipment Needs
6. Desired Operational Date

If you have any questions regarding this request, please contact John Doe, XXX-520, at 555.555.9999.

Manager, Air Traffic Division, AXX-500

Attachment (*Staff Study*)

APPENDIX IV. Validation Flow Chart